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EXAMINER	
LIN, PHYOWAI	
ART UNIT	**PAPER NUMBER**
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/801,481	DOERR ET AL.	
	Examiner	Art Unit	
	PHYOWAI LIN	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-28 is/are pending in the application.

4a) Of the above claim(s) 23-28 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4,7-15 and 17-28 is/are rejected.

7)☒ Claim(s) 5,6 and 16 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 March 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 08/06/2004.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-22 drawn to an optical sampling method that is comprised of optical data pulse and optical sampling pulse which are directing to first balanced detector and second balanced detector with phase difference to each other and combined two balance electrical signals to obtain a sampling signal with data pulse intensity. This is classified in class 398, subclass 202.

II. Claims 23-25, drawn to an optical sampling method that is comprised of optical data pulse and optical sampling pulse with first polarization component and second polarization component which are directing to first balanced detector and second balanced detector with phase difference to each other and additionally third balanced detector and forth balanced detector with third and fourth phase difference are added to the optical sampling method. This is classified in class 398, subclass 152.

III. Claims 25-28, drawn to a method that is comprised of input optical signal with first frequency distribution and second frequency distribution and both frequencies distribution are associated with code word. Additionally, input optical signal is a wavelength multiplexed optical signal and directing sampling pulse and input optical signal to a linear sampling system. This is classified in class 398, subclass 77.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I, II and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions are unrelated because invention I is related to an optical sampling method that is comprised of optical data pulse and optical sampling pulse which are directing to first balanced detector and second balanced detector with phase difference to each other and combined two balance electrical signals to obtain a sampling signal with data pulse intensity. Invention II is related to optical data pulse and optical sampling pulse with first polarization component and second polarization component which are directing to first balanced detector and second balanced detector with phase difference to each other and additionally third balanced detector and forth balanced detector with third and fourth phase difference are added to the optical sampling method. Invention III is related to a method that is comprised of input optical signal with first frequency distribution and second frequency distribution and both frequencies distribution are associated with code word. Additionally, input optical signal is a wavelength multiplexed optical signal and directing sampling pulse and input optical signal to a linear sampling system. Inventions I and II are different because invention I does not need first and second polarization component for directing optical data pulses and optical sampling pulses to first and second balanced detector and additionally invention I does not have third and fourth balanced detector with their phase differences. Inventions I and III are different because invention I does not have an optical code-division multiplexer for

optical signal with first and second coded frequency distribution, which are directed to the linear sampling system.

3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Atty. Michael D. Jones on (at (503)226-7391) on June 21,2007 a provisional election was made without traverse to prosecute the invention of group I, claims 1-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 23-28 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

6. The references listed in the Information Disclosure Statement filed on August 06,2004 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. **Claims 2,9,11,17 and 18** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "about 90 degree" in claims 2,9,11,17 and 18 is a relative term, which renders the claim indefinite. The term "about 90 degree" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. **Claims 1-17** are rejected under 35 U.S.C. 102(e) as being anticipated by Taylor (US Pub Number 20040114939).

Regarding to claim 1, Taylor discloses an optical sampling method (see FIG.3A), comprising:

receiving an optical data pulse and an optical sampling pulse (see paragraph [0050], lines 5-7 and FIG.3A where in the sampling receiver 50 receives the optical data pulse from incoming signal and optical sampling pulse from local oscillator);

directing first portions of the optical data pulse and the optical sampling pulse to a first balanced detector (photodetector 64) with a first phase difference to obtain a first balanced electrical signal (see paragraph [0050], lines 11-15 and FIG.3A where in from 90 degree hybrid portion, the first path (upper part of hybrid) of optical data pulse and optical sampling pulse couple to the first balanced photodetector 64 with phase difference 90 degree and after passing through the photodetector, it will obtain first balanced electrical signal);

directing second portions of the optical data pulse and the optical sampling pulse to a second balanced detector (photodetector 62) with a second phase difference to obtain a second balanced electrical signal (see paragraph [0050], lines 11-15 and FIG.3A where in from 90 degree hybrid portion, the second path (lower part of hybrid) of optical data pulse and optical sampling pulse couple to the second balanced photodetector 62 with phase difference 90 degree and after passing through the photodetector, it will obtain second balanced electrical signal); and

combining the first balanced electrical signal and the second balanced electrical signal to obtain a sample signal associated with data pulse intensity (see paragraph

[0157], lines 2-3 and FIG.3A where in DSP circuit combines both first and second balanced electrical signal and obtain sampling signal with data pulse intensity).

Regarding to claim 2, Taylor discloses everything claimed as applied above (see claim 1). In addition, the method includes: wherein a difference between the first phase difference and the second phase difference is about 90 degrees (see paragraph [0050], lines 11-15).

Regarding to claims 3 and 7, Taylor discloses everything claimed as applied above (see claim 2). In addition, the method includes: wherein at least one of the phase differences is established by directing at least one of the second portion of the optical data pulse and the second portion of the optical sampling pulse through an optical retarder (see paragraph [0157], lines 2-3 and FIG.3A where in the phase difference is established by directing the second portion of optical data pulse and optical sampling pulse into the 90degree hybrid (optical retarder)).

Regarding to claim 4, Taylor discloses everything claimed as applied above (see claim 3). In addition, the method includes: wherein the second portions of the optical data pulse and the optical sampling pulse are directed to the optical retarder (see FIG.3A where in the second portion (lower part of hybrid) of optical data pulse and optical sampling pulse are directed through 90degree hybrid (optical retarder)).

Regarding to claim 8, Taylor discloses everything claimed as applied above (see claim 2). In addition, the method includes: wherein one of the phase differences is established by directing the second portion of the optical sampling pulse to a thermooptic modulator (extra phase shift) (see paragraph [0050], lines 19-20 and

FIG.3A where in the second path (lower part of hybrid) of optical sampling pulse are directing to the extra phase shift portion for achieving phase differences).

Regarding to claim 9, Taylor discloses everything claimed as applied above (see claim 8). In addition, the method includes: wherein a difference between the first phase difference and the second phase difference is about 90 degrees (see paragraph [0050], lines 11-15).

Regarding to claim 10, Taylor discloses a sampling method (see FIG.3A), comprising:

dividing a sampling signal into first portion and a second portion (see FIG.3A where in the sampling signal from local oscillator are divided into first portion and second portion inside the 90degree hybrid portion);

dividing a test signal (incoming signal) into a first portion and a second portion (see FIG.3A where in the incoming signal are divided into first portion and second portion inside the 90degree hybrid portion);

mixing the first portion of the sampling signal and the first portion of the test signal in a balanced detector (photodetector 64) to produce a first balanced electrical signal (see paragraph [0050], lines 11-15 and FIG.3A where in from 90 degree hybrid portion, the first path (upper part of hybrid) of incoming signal and optical sampling pulse couple to the first balanced photodetector 64 and after passing through the photodetector, it will obtain first balanced electrical signal);

establishing a selected phase difference between the second portion of the sampling signal and the second portion of the test signal based relative to a phase

difference between the first portion of the sampling signal and the first portion of the data signal (see paragraph [0050], lines 11-15 where in a selected phase difference between the second portion of the sampling signal and the second portion of the test signal based relative to a phase difference between the first portion of the sampling signal and the first portion of the data signal is 90 degree);

mixing the second portion of the sampling signal and the second portion of the test signal in a balanced detector (photodetector 62) to produce a second balanced electrical signal (see paragraph [0050], lines 11-15 and FIG.3A where in from 90 degree hybrid portion, the second path (lower part of hybrid) of optical data pulse and optical sampling pulse couple to the second balanced photodetector 62 with phase difference 90 degree and after passing through the photodetector, it will obtain second balanced electrical signal); and

combining the first balanced electrical signal and the second balanced electrical signal to obtain a combined signal associated with test signal intensity (see paragraph [0157], lines 2-3 and FIG.3A where in DSP circuit combines both first and second balanced electrical signal and obtain sampling signal with data pulse intensity).

Regarding to claim 11, Taylor discloses everything claimed as applied above (see claim 10). In addition, the method includes: the selected phase difference is about 90 degrees (see paragraph [0050], lines 11-15).

Regarding to claims 12 and 13, Taylor discloses everything claimed as applied above (see claim 11). In addition, the method includes: wherein the selected phase difference is based on an optical path length difference between a first optical path and

a second optical path associated with the second portions (see paragraph [0050], lines 11-15).

Regarding to claim 14, Taylor discloses an optical sampling system (see FIG.3A), comprising:

a data input configured to receive a test signal (see paragraph [0050], lines 5-7 and FIG.3A where in the sampling receiver 50 receives the optical data pulse (test signal) from incoming signal);

a sampling pulse input configured to receive a sampling pulse (see paragraph [0050], lines 5-7 and FIG.3A where in the sampling receiver 50 receives optical sampling pulse from local oscillator);

an optical system configured to produce a first combination of the data input and the sampling pulse and a second combination of the data input and the sampling pulse, wherein the first combination is associated with a first phase difference and the second combination is associated with a second phase difference (see paragraph [0050], lines 11-15 and FIG.3A where in from 90 degree hybrid portion, the first combination (upper part of hybrid) of optical data pulse and optical sampling pulse and the second combination (lower part of hybrid) of optical data pulse and optical sampling are splitted and both first and second path are associated with 90 degree phase differences);

a first balanced detector (photodetector 64) and a second balanced detector (photodetector 62) configured to receive the first combination and the second combination, respectively, and produce a first balanced signal and a second balanced signal, respectively (see FIG.3A where in first combination of incoming signal and

sampling signal couple into photodetector 64 and obtain the first electrical signal and second combination of incoming signal and sampling signal couple into photodetector 62 and obtain the second electrical signal);

a signal processing system configured to combine the first balanced signal and the second balanced signal (see paragraph [0032],lines 12-16; [0157], lines 2-3 and FIG.3A where in DSP circuit combines both first and second balanced electrical signal and doing the function of signal processing).

Regarding to claim 15,Taylor discloses everything claimed as applied above (see claim 14). In addition, the optical sampling system includes: an optical modulator (extra phase shift) configured to establish the second phase difference (see paragraph [0050], lines 19-20 and FIG.3A where in extra phase shift does the phase difference of second path).

Regarding to claim 17, Taylor discloses everything claimed as applied above (see claim 14). In addition, the optical sampling system includes: wherein a difference between the first phase difference and the second phase difference is about 90 degrees (see paragraph [0050], lines 11-15).

Regarding to claims 18 and 21, Taylor discloses an optical sampler (see FIG.3A), comprising:

a signal input configured to receive an test optical signal (see paragraph [0050], lines 5-7 and FIG.3A where in the sampling receiver 50 receives the optical data pulse (test signal) from incoming signal);

an optical detection system configured to combine the test optical signal with a sampling pulse to produce a first balanced detector (photodetector 64) output associated with a first phase difference (see paragraph [0050], lines 11-15 and FIG.3A where in first path of optical data signal from incoming signal and optical sampling signal from local oscillator are coupled into first balanced photodetector 64 and the detector outputs the combined signal with 90 degree phase shift) and a second balanced detector (photodetector 62) output associated with a second phase difference (see paragraph [0050], lines 11-15 and FIG.3A where in second path of optical data signal from incoming signal and optical sampling signal from local oscillator are coupled into second balanced photodetector 62 and the detector outputs the combined signal with 90 degree phase shift, wherein the first phase difference and the second phase difference differ by about 90 degrees (see paragraph [0050], lines 11-15);

a controller (DSP 36) configured to receive the first balanced detector output and the second balanced detector output and produce a linear sampling signal (see paragraph [0032],lines 12-16; [0157], lines 2-3 and FIG.3A where in DSP circuit combines both first and second balanced electrical signal and obtain sampling signal); and

a memory (buffer) configured to store a sample value based on the sampling signal (see paragraph [0054], lines 16-17 where in DSP 36 has buffer to store sample values).

Regarding to claim 19,Taylor discloses everything claimed as applied above (see claim 18). In addition, the optical sampling system includes: wherein the controller configured to provide a variable time delay of the sampling pulse with respect to a period associated with the test signal (see paragraph [0054], lines 14-17 and paragraph [0032], lines 12-16 where in the time delay between sampling pulse and test signal is caused by the different paths lengths from the signal splitter to the two A/D and the controller (DSP) can configured on it).

Regarding to claim 20, Taylor discloses everything claimed as applied above (see claim 18). In addition, the optical sampling system includes: where in the period is a bit interval (see paragraph [0025], lines 5-7).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor (US Pub Number 20040114939) in view of Pering et al. (US Pub Number 2003/0063285).

Regarding to claim 22, Taylor discloses everything claimed as applied above (see claim 18). However, Taylor fails to specifically disclose optical sampling system includes a display for showing the sample values, which are being proceeded in the signal processor.

Pering et al. disclose heterodyne optical analysis system, which includes display device, which can show any optical data information such as sampling data, wavelength, waveform and so on (see paragraph [0065], lines 1-4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the same time the invention was made to modify Taylor's invention as to use display device after functioning signal processor in linear sampling receiver system instead of using other optical device because it would allow to improve the optical receiver system as any error has been seeing in the display it can always go back to the beginning state and make some adjustment as needed.

Allowable Subject Matter

13. **Claims 5,6,16** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Citation of Pertinent Prior Art

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Naito et al. disclose polarization diversity optical receiver system for coherent optical communication using input optical signal, local oscillator, photodetector and A/D converter.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHYOWAI LIN whose telephone number is (571) 270-1659. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PWL 06/27/07

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KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER